

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 28-31 and 33-56 are presented for consideration. Claims 28-31, 33-35 and 54-56 are independent. Claim 32 has been canceled without prejudice or disclaimer. Claims 28-31 and 33-36 have been amended to clarify features of the subject invention, while claims 37-56 have been added to recite additional features of the subject invention. Support for these changes and these claims can be found in the original application, as filed. Therefore, no new matter has been added.

Applicant notes with appreciation that claims 30, 33 and 34 have been allowed over the art of record. In addition to these claims being allowable, Applicant submits that independent claims 28, 29, 31, 35 and 54-56 patentably define features of the subject invention. Accordingly, Applicant requests favorable reconsideration and withdrawal of the objection and rejections set forth in the above-noted Office Action.

Claims 28, 31 and 32 have been objected to due to informalities. Claims 28 and 31 have been amended to overcome this objection, while claim 32 has been canceled without prejudice or disclaimer. Applicant submits, therefore, that this objection has been overcome. Such favorable indication is requested.

Turning now to the art rejections, claims 28, 29, 35 and 36 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,608,773 to Korenaga et al. Claims 31, 32 and 35 have been rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 5,780,943 to Ono. Applicant submits that the cited art does not teach or suggest many features of the

present invention, as previously recited in these claims. Therefore, these rejections are respectfully traversed. Nevertheless, Applicant submits that independent claims 28, 29, 31, 35 and 54-56, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the present invention, independent claim 28 recites an exposure apparatus that includes a carrying member for carrying thereon a workpiece, a first magnet element fixed to the carrying member, and a second magnet element for producing a force which acts between the first and second magnet elements in a direction opposite to a gravity direction of the carrying member. The first and second magnets have different sizes with respect to a direction perpendicular to the direction of the force.

In another aspect of the present invention, independent claim 29 recites an exposure apparatus that includes a carrying member for carrying thereon a workpiece, and a supporting mechanism for supporting the carrying member. The supporting mechanism includes a first element for producing a resisting force to a shift in a supporting direction, and a second element for producing a force for increasing the shift in the supporting direction. The second element can produce a force for moving the carrying member downwardly.

In still another aspect of the present invention, independent claim 31 recites an exposure apparatus that includes a carrying member for carrying a workpiece thereon, and a supporting mechanism for supporting the carrying member between a workpiece transfer position and a workpiece processing position. The supporting mechanism includes a spring element and a plurality of magnet elements. Adjacent to the workpiece processing position, the weight of the carrying member and a combined force of a force produced by the spring element and a force produced by the plurality of magnet elements are approximately equal to each other. A clearance

between the plurality of magnet elements when the carrying member is present at the transfer position is smaller than the clearance when the carrying member is present at the workpiece processing position, and adjacent to the workpiece processing position, an absolute value of a changing rate of the force produced by the plurality of magnet elements with respect to a change in the clearance, is set to be smaller than an absolute value of a change rate of the force produced by the spring element with respect to a change in the clearance.

In yet another aspect of the present invention, independent claim 35 recites an exposure apparatus that includes a carrying member for carrying a workpiece thereon, and a supporting mechanism for supporting the carrying member between a workpiece transfer position and a workpiece processing position. Adjacent to the workpiece processing position and the workpiece transfer position, the weight of the carrying member and a force produced by the supporting mechanism are approximately equal to each other, and in the exposure apparatus, there is a position, other than the workpiece processing position and the workpiece transfer position, at which the weight of the carrying member and a force acting on the carrying member is not approximately equal to each other.

In a still further aspect of the present invention, independent claim 54 recites an exposure apparatus that includes a carrying member for carrying a workpiece thereon, and a supporting mechanism for supporting the carrying member between a workpiece transfer position and a workpiece processing position. The supporting mechanism includes a spring element and a plurality of magnet elements. Adjacent to the workpiece processing position, the weight of the carrying member and a combined force of a force produced by the spring element and a force produced by the plurality of magnet elements are approximately equal to each other, and in the

exposure apparatus, there is a position, other than the workpiece processing position and the workpiece transfer position, at which the weight of the carrying member and a combined force of a force produced by the spring element and a force produced by the plurality of magnet elements is not approximately equal to each other.

In a yet further aspect of the present invention, independent claim 55 recites an exposure apparatus that includes a carrying member for carrying a workpiece thereon, and a supporting mechanism for supporting the carrying member between a workpiece transfer position and a workpiece processing position. Adjacent to the workpiece processing position, a force produced by the supporting mechanism acts so as to prevent the carrying member from being shifted from the workpiece processing position, and adjacent to the workpiece transfer position, the force produced by the supporting mechanism acts so as to prevent the carrying member from being shifted from the workpiece transfer position.

In still another aspect of the present invention, independent claim 56 recites an exposure apparatus that includes a carrying member for carrying a workpiece thereon, and a supporting mechanism for supporting the carrying member between a workpiece transfer position and a workpiece processing position, the supporting mechanism having a spring element and a plurality of magnet elements. Adjacent to the workpiece processing position, a force produced by the supporting mechanism acts so as to prevent the carrying member from being shifted from the workpiece processing position, and adjacent to the workpiece transfer position, the force produced by the supporting mechanism acts so as to prevent the carrying member from being shifted from the workpiece transfer position.

Applicant submits that the cited art does not teach or suggest such features of the present invention as recited in independent claims 28, 29, 31, 35 and 54-56.

The Korenaga et al. shows an exposure apparatus that includes a first magnet element 8 and a second magnet element 13, with the mask frame 1 being the very object to be supported, which is supported by ball 10. Applicant submits, however, that the magnet elements in the Korenaga et al. patent are merely elements for applying a pre-load. In other words, Applicant submits that the second magnet element 13, for example, in the Korenaga et al. patent does not produce force in a direction opposite to the direction of the gravity direction of the mask frame 1. Applicant submits, therefore, that the Korenaga et al. patent does not teach or suggest salient features of Applicant's invention, as recited in independent claims 28, 29 and 35, for example.

The Examiner relies on the Ono patent for teaching a supporting system that includes a carrying member 20 for carrying a workpiece 14, and a supporting mechanism 38, 46, 42 for supporting the carrying member. Applicant submits, however, that in the device in the Ono patent, at the workpiece processing position and the workpiece transfer position, the weight of the carrying member and the supporting force of the supporting mechanism do not balance each other. If, on the other hand, in the Ono patent, such a balance were to be provided, the workpiece processing position and the workpiece transfer position must be maintained during the workpiece processing period and the workpiece transfer period, respectively, by means of voice coil motor 36. On that occasion, heat generated by the motor would cause a deterioration in the precision. Applicant submits, therefore, that the Ono patent does not teach or suggest salient features of Applicant's present invention, as recited in independent claims 31 and 35, for example.

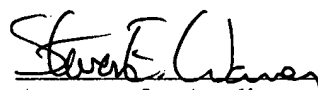
For the foregoing reasons, Applicant submits that the present invention, as recited in independent claims 28, 29, 31, 35 and 54-56, also is patentably defined over the cited art.

Dependent claims 36-44, 50 and 53 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicant further submits that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the objection and rejections set forth in the above-noted Office Action and an early Notice of Allowance are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



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